

### In the Claims

Please amend Claims 1-2, 4-5, 18, 20, 22-23, 34, 54-58, 60, 62-63, and 75. Withdrawn Claims 66-73 have been amended to match the amendments made to similar non-withdrawn claims.

1. (Currently Amended) [[An]] A system including an application program interface (API) embodied on one or more computer readable storage media, comprising:

a first group of services for integrating a plurality of content repositories into virtual content repositories (VCRs) such that the plurality of content repositories appear and behave as a single content repository, wherein the first group of services include[:]]

first functions for authorizing access to the plurality of content repositories,[:]]

second functions for incorporating combined content of the plurality of content repositories into a hierarchical namespace including representing the plurality of content repositories as a hierarchical namespace of nodes under a single VCR root node,[:]]

third functions for extending a VCR content model to represent information in the plurality of content repositories including sharing a common representation of combined content of the plurality of content repositories as the hierarchical namespace of nodes under a single VCR root node between the API and a content repository service provider interface (SPI) implemented by each of the plurality of content repositories,[:]] and

fourth functions for traversing the hierarchical namespace incorporating combined content of the plurality of content repositories;

a second group of services for manipulating information in VCRs;

a third group of services for searching VCRs; and

a ~~forth~~ fourth group of services for configuring VCRs;

wherein the application program interface is compatible with the content repository service provider interface (SPI) that maps operations on the VCR content model to the plurality of content repositories.

2. (Currently Amended) The ~~application program interface~~ system of claim 1 wherein: the SPI provides a subset of the services available in the API.

3. (Canceled).

4. (Currently Amended) The ~~application program interface~~ system of claim 1 wherein:

authorizing access to the plurality of content repositories includes providing authentication information to the plurality of content repositories and receiving authentication results from the plurality of content repositories.

5. (Currently Amended) The ~~application program interface~~ system of claim 1 wherein:  
authorizing access to the plurality of content repositories utilizes Java Authentication and Authorization Service.

6-7. (Canceled).

8. (Withdrawn) The application program interface of claim 1, wherein the second group of services comprises:

first functions that enable creation of information in VCRs;  
second functions that enable reading of information from VCRs;  
third functions that enable updating of information in VCRs;  
fourth functions that enable deleting of information in VCRs;  
wherein information in VCRs maps to information in one or more content repositories;

and

wherein information can be contents and/or schemas.

9. (Withdrawn) The application program interface of claim 1, wherein the third group of services comprises:

first functions that enable searching content information in VCRs;  
second functions that enable searching schema information in VCRs; and  
third functions that enable configuring search result caches.

10. (Withdrawn) The application program interface of claim 9 wherein:  
searching content information in VCRs includes searching content repositories.

11. (Withdrawn) The application program interface of claim 9 wherein:  
searching schema information in VCRs includes searching content repositories.

12. (Withdrawn) The application program interface of claim 9 wherein:

configuring search result caches includes at least one of: 1) setting the time to live for cache entries; and 2) setting the maximum number of cache entries.

13. (Withdrawn) The application program interface of claim 1, wherein the fourth group of services comprises:

first functions that enable configuring repository caches; and

second functions that enable configuring authorization information for content repositories.

14. (Withdrawn) The application program interface of claim 13 wherein:

configuring repository caches includes at least one of: 1) turning a cache on or off; 2) setting the maximum number of entries for a cache; and 3) setting the time to live for cache items.

15. (Withdrawn) The application program interface of claim 13 wherein:

configuring authorization information for content repositories includes at least one of: 1) setting a password and user name for a repository; and 2) setting a read-only attribute for a repository.

16. (Withdrawn) A network software architecture comprising the API as recited in claim 1.

17. (Canceled).

18. (Currently Amended) ~~A software architecture for a distributed computing system embodied on one or more computer readable storage media~~, comprising:

a first application configured to execute on one or more processors and to handle requests provided to it by a second application over a network; and

an application program interface (API) to provide functions used by the first application to access a virtual content repository (VCR), wherein the API includes[:]

a first group of services for integrating a plurality of content repositories into virtual content repositories (VCRs), wherein the first group of services include[:]

first functions for authorizing access to the plurality of content repositories.[:]

second functions for incorporating combined content of the plurality of content repositories into a hierarchical namespace including representing the plurality of content repositories as a hierarchical namespace of nodes under a single VCR root node<sub>1</sub>[[:]]

third functions for extending a VCR content model to represent information in the plurality of content repositories including sharing a common representation of combined content of the plurality of content repositories as the hierarchical namespace of nodes under a single VCR root node between the API and a content repository service provider interface (SPI) implemented by each of the plurality of content repositories<sub>1</sub>[[:]] and

fourth functions for traversing the hierarchical namespace incorporating combined content of the plurality of content repositories<sub>1</sub>[[:]]

a second group of services for manipulating information VCRs<sub>1</sub>[[:]]

a third group of services for searching VCRs<sub>1</sub>[[:]] and

a ~~fourth~~ fourth group of services for configuring VCRs<sub>1</sub>[[:]]

wherein the API is compatible with the content repository service provider interface (SPI) that maps operations on the VCR content model to the plurality of content repositories;

wherein the VCR integrates the plurality of content repositories such that the plurality of content repositories appear and behave as a single content repository.

19. (Canceled).

20. (Currently Amended) The ~~software-architecture~~ distributed computing system of claim 18 wherein:

the SPI provides a subset of the services available in the API.

21. (Canceled).

22. (Currently Amended) The ~~software-architecture~~ distributed computing system of claim 18 wherein:

authorizing access to the plurality of content repositories includes providing authentication information to the plurality of content repositories and receiving authentication results from the plurality of content repositories.

23. (Currently Amended) The ~~software architecture~~ distributed computing system of claim 18 wherein:

authorizing access to the plurality of content repositories utilizes Java Authentication and Authorization Service.

24-25. (Canceled).

26. (Withdrawn – Previously Presented) The software architecture of claim 18 wherein the second group of services comprises:

first functions that enable creation of information in VCRs;

second functions that enable reading of information from VCRs;

third functions that enable updating of information in VCRs;

fourth functions that enable deleting of information in VCRs;

wherein information in VCRs maps to information in one or more content repositories;

and

wherein information can be contents and/or schemas.

27. (Withdrawn – Previously Presented) The software architecture of claim 18 wherein the third group of services comprises:

first functions that enable searching content information in VCRs;

second functions that enable searching schema information in VCRs; and

third functions that enable configuring search result caches.

28. (Withdrawn) The software architecture of claim 27 wherein:

searching content information in VCRs includes searching content repositories.

29. (Withdrawn) The software architecture of claim 27 wherein:

searching schema information in VCRs includes searching content repositories.

30. (Withdrawn) The software architecture of claim 27 wherein:

configuring search result caches includes at least one of: 1) setting the time to live for cache entries; and 2) setting the maximum number of cache entries.

31. (Withdrawn – Previously Presented) The software architecture of claim 18, wherein the fourth group of services comprises:

first functions that enable configuring repository caches; and  
second functions that enable configuring authorization information for content repositories.

32. (Withdrawn) The software architecture of claim 31 wherein:

configuring repository caches includes at least one of: 1) turning a cache on or off; 2) setting the maximum number of entries for a cache; and 3) setting the time to live for cache items.

33. (Withdrawn) The software architecture of claim 31 wherein:

configuring authorization information for content repositories includes at least one of: 1) setting a password and user name for a repository; and 2) setting a read-only attribute for a repository.

34. (Currently Amended) A method executing on one or more processors for providing a virtual content repository (VCR) representing a plurality of content repositories embodied on one or more computer readable storage media such that they appear and behave as a single content repository, comprising:

providing a service provider interface (SPI) to be implemented by each of the plurality of content repositories to map operations on a VCR content model to the plurality of content repositories; and

providing an application program interface (API), wherein the API includes[::]

a first group of services for integrating the plurality of content repositories into the VCR, wherein the first group of services include[::]

first functions for authorizing access to the plurality of content repositories,[::]

second functions for incorporating combined content of the plurality of content repositories into a hierarchical namespace including representing the plurality of content repositories as a hierarchical namespace of nodes under a single VCR root node,[::]

third functions for extending the VCR content model to represent information in the plurality of content repositories including sharing a common

representation of combined content of the plurality of content repositories as the hierarchical namespace of nodes under a single VCR root node between the API and the content repository service provider interface<sub>1</sub>[[:]] and

fourth functions for traversing the hierarchical namespace incorporating combined content of the plurality of content repositories<sub>1</sub>[[:]]

a second group of services for manipulating information VCRs<sub>1</sub>[[:]]

a third group of services for searching VCRs<sub>1</sub>[[:]] and

a ~~forth~~ fourth group of services for configuring VCRs.

35. (Original) The method of claim 34 wherein the content model includes:  
a set of hierarchically related objects.
36. (Previously Presented) The method of claim 34 wherein  
the namespace makes addressable the content in the plurality of content repositories.
37. (Original) The method of claim 34 wherein the API includes:  
services for performing operations on the namespace and the content model.
38. (Previously Presented) The method of claim 34 wherein the SPI includes:  
services for merging contents of the plurality of content repositories into the namespace  
and the content model.
39. (Canceled).
40. (Previously Presented) The method of claim 34 wherein:  
the content repository service provider interface provides a subset of the services  
available in the application program interface.
41. (Canceled).
42. (Previously Presented) The method of claim 34 wherein:  
authorizing access to the plurality of content repositories includes providing  
authentication information to the plurality of content repositories and receiving authentication  
results from the plurality of content repositories.

43. (Previously Presented) The method of claim 34 wherein:  
authorizing access to the plurality of content repositories utilizes Java Authentication and Authorization Service.
- 44-45. (Canceled).
46. (Withdrawn – Previously Presented) The method of claim 34 wherein the second group of services comprises:  
first functions that enable creation of information in VCRs;  
second functions that enable reading of information from VCRs;  
third functions that enable updating of information in VCRs;  
fourth functions that enable deleting of information in VCRs;  
wherein information in VCRs maps to information in one or more content repositories;  
and  
wherein information can be contents and/or schemas.
47. (Withdrawn – Previously Presented) The method of claim 34 wherein the third group of services comprises:  
first functions that enable searching content information in VCRs;  
second functions that enable searching schema information in VCRs; and  
third functions that enable configuring search result caches.
48. (Withdrawn) The method of claim 47 wherein:  
searching content information in VCRs includes searching content repositories.
49. (Withdrawn) The method of claim 47 wherein:  
searching schema information in VCRs includes searching content repositories.
50. (Withdrawn) The method of claim 47 wherein:  
configuring search result caches includes at least one of: 1) setting the time to live for cache entries; and 2) setting the maximum number of cache entries.



51. (Withdrawn – Previously Presented) The method of claim 34 wherein the fourth group of services comprises:

first functions that enable configuring repository caches; and  
second functions that enable configuring authorization information for content repositories.

52. (Withdrawn) The method of claim 51 wherein:

configuring repository caches includes at least one of: 1) turning a cache on or off; 2) setting the maximum number of entries for a cache; and 3) setting the time to live for cache items.

53. (Withdrawn) The method of claim 51 wherein:

configuring authorization information for content repositories includes at least one of: 1) setting a password and user name for a repository; and 2) setting a read-only attribute for a repository.

54. (Currently Amended) A ~~machine~~ computer readable storage medium having instructions stored thereon that when executed by a processor cause a system to:

provide an application program interface (API), wherein the API includes[::]

a first group of services for integrating a plurality of content repositories into virtual content repositories (VCR) such that the plurality of content repositories appear and behave as a single content repository, wherein the first group of services include[::]

first functions for authorizing access to the plurality of content repositories,[::]

second functions for incorporating combined content of the plurality of content repositories into a hierarchical namespace including representing the plurality of content repositories as a hierarchical namespace of nodes under a single VCR root node,[::];

third functions for extending a VCR content model to represent information in the plurality of content repositories including sharing a common representation of combined content of the plurality of content repositories as the hierarchical namespace of nodes under a single VCR root node between the API and a content repository service provider interface (SPI) implemented by each of the plurality of content repositories,[::] and

fourth functions for traversing the hierarchical namespace incorporating combined content of the plurality of content repositories,[[:]]  
a second group of services for manipulating information VCRs,[[:]]  
a third group of services for searching VCRs,[[:]] and  
a ~~forth~~ fourth group of services for configuring VCRs;  
wherein the SPI maps operations on the VCR content model to the plurality of content repositories.

55. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the content model includes:  
a set of hierarchically related objects.

56. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein:  
the namespace makes addressable the content in the plurality of content repositories.

57. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the API includes:  
services for performing operations on the namespace and the content model.

58. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the SPI includes:  
services for merging contents of the plurality of content repositories into the namespace and the content model.

59. (Canceled).

60. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein:  
the content repository service provider interface provides a subset of the services available in the application program interface.

61. (Canceled).

62. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein:

authorizing access to the plurality of content repositories includes providing authentication information to repositories and receiving authentication results from the plurality of content repositories.

63. (Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein:

authorizing access to the plurality of content repositories utilizes Java Authentication and Authorization Service.

64-65. (Canceled).

66. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the second group of services comprises:

first functions that enable creation of information in VCRs;

second functions that enable reading of information from VCRs;

third functions that enable updating of information in VCRs;

fourth functions that enable deleting of information in VCRs;

wherein information in VCRs maps to information in one or more content repositories;

and

wherein information can be contents and/or schemas.

67. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the third group of services comprises:

first functions that enable searching content information in VCRs;

second functions that enable searching schema information in VCRs; and

third functions that enable configuring search result caches.

68. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 67 wherein:

searching content information in VCRs includes searching content repositories.

69. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 67 wherein:

searching schema information in VCRs includes searching content repositories.

70. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 67 wherein:

configuring search result caches includes at least one of: 1) setting the time to live for cache entries; and 2) setting the maximum number of cache entries.

71. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 54 wherein the fourth group of services comprises:

first functions that enable configuring repository caches; and

second functions that enable configuring authorization information for content repositories.

72. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 71 wherein:

configuring repository caches includes at least one of: 1) turning a cache on or off; 2) setting the maximum number of entries for a cache; and 3) setting the time to live for cache items.

73. (Withdrawn – Currently Amended) The ~~machine~~ computer readable storage medium of claim 71 wherein:

configuring authorization information for content repositories includes at least one of: 1) setting a password and user name for a repository; and 2) setting a read-only attribute for a repository.

74. (Canceled).

75. (Currently Amended) An application program interface (API) embodied on one or more computer readable media, comprising:

a first group of services that integrates a plurality of content repositories into virtual content repositories (VCRs) such that the plurality of content repositories appear and behave as a single content repository, wherein the first group of services include[:]

first functions that authorize access to the plurality of content repositories,[[:]]

second functions that incorporate combined content of the plurality of content repositories into a hierarchical namespace including representing the plurality of content repositories as a hierarchical namespace of nodes under a single VCR root node,[[:]]

third functions that extend a VCR content model to represent information in the plurality of content repositories including sharing a common representation of combined content of the plurality of content repositories as the hierarchical namespace of nodes under a single VCR root node between the API and a content repository service provider interface (SPI) implemented by each of the plurality of content repositories,[[:]] and

fourth functions that traverse the hierarchical namespace incorporating combined content of the plurality of content repositories;

a second group of services that manipulates information in VCRs;

a third group of services that searches VCRs; and

a ~~forth~~ fourth group of services that configures VCRs;

wherein the application program interface is compatible with the content repository service provider interface (SPI) that maps operations on the VCR content model to the plurality of content repositories.